

REMARKS

I. INTRODUCTION

Claims 49-51 have been cancelled, without prejudice. Claims 1, 15 and 29 have been amended above merely to clarify the subject matter recited therein and to include the subject matter of now-cancelled claims 49-51, respectively, and pursuant to the discussion between the Examiner and Applicant's attorney regarding the present application on August 7, 2007. New claims 52-54 have been added to recite subject matter originally recited in previously-cancelled claims 10, 24 and 38. Accordingly, claims 1-9, 11-23, 25-37, 39-48 and 52-54 are now under consideration in the above-referenced application. Provided above, please find a claim listing indicating the cancellation of claims 49-51, the amendments to claims 1, 15 and 29 and the addition of new claims 52-54 on separate sheets so as to comply with the requirements set forth in 37 C.F.R. § 1.121. It is respectfully submitted that no new matter has been added.

II. REJECTIONS UNDER 35 U.S.C. 103(a) SHOULD BE WITHDRAWN

Claims 1, 3, 6-9, 11-13, 15, 17, 20-23, 25-27, 29, 31, 34-37, 39-41 and 43-51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,016,047 issued to Notten et al. (the "Notten Patent"). Claims 2, 4, 14, 16, 18, 28, 30, 32 and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Notten Patent, in view of U.S. Patent No. 5,767,659 issued to Farley (the "Farley Patent"). Claims 5, 19 and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Notten Patent and the Farley Patent, in view of U.S. Patent No. 5,889,385 issued to Podrazhansky et al. (the "Podrazhansky Patent"). Claims 14, 28 and 42 stand rejected under 35 U.S.C. § 103(a) as being also unpatentable over the Notten Patent, in view of U.S. Patent No. 6,188,202 issued to Yagi (the "Yagi Patent"). Applicant respectfully submits that the Notten Patent, taken alone or in combination with the Farley Patent, the Podrazhansky Patent or the

Yagi Patent, do not teach, suggest or disclose the subject matter recited in amended independent claims 1, 15 and 29, and the claims which depend therefrom. Thus, it is respectfully requested that the 35 U.S.C. §§ 103(a) rejections of these claims be withdrawn for at least the reasons set forth herein below.

In order for a claim to be rejected for obviousness under 35 U.S.C. § 103, not only should the prior art teach or suggest each element of the claim, the prior art should also suggest combining the elements in the manner contemplated by the claim. *See KSR International Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1731 (2007); *Takeda Chemical Industries, Ltd. v. Alphapharm PTY, Ltd.*, No. 06-1329, 492 F.3d 1350, 1356-57 (Fed. Cir. June 28, 2007) (recognizing no inconsistency between the *Graham* analysis and the “TSM” test). “It is improper to use the inventor’s disclosure as a road map for selecting and combining prior art disclosures.” *See Grain Processing Corp. v. American Maize-Products Corp.*, 840 F.2d 902, 907 (Fed. Cir. 1988). “[T]he reference must be viewed without the benefit of hindsight afforded to the disclosure.” *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants’ disclosure. *See In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

The Notten Patent relates to a battery management system which includes input means for receiving input signals representative of a physical quantity of a battery and processing means for calculating at least one physical quantity of the battery at least partially based on the input signals and a battery temperature; and for generating an output signal derived from the calculated physical quantity. The Notten Patent also describes a battery charger/discharger including a battery management system. (See Notten Patent, Abstract). As described in the Notten Patent, the battery

management system 100 of FIG. 2 controls the battery charger 200 by maintaining the battery temperature substantially at a predetermined temperature curve. In a simple form, the battery temperature is maintained at a constant temperature of, for instance, 30°C. Alternatively, the battery temperature is maintained at a predetermined offset, for instance 10°C., related to the ambient temperature. (See *id.*, col. 26, lns. 6-17).

The described simulation tool of the Notten Patent can be used to design an optimum temperature curve for a specific application and operating environment. It will be appreciated that any conventional control loop may be used to control the battery charger 200 in such a way that the battery temperature substantially matches the predetermined temperature curve. The current or voltage level supplied by the battery charger 200 may be controlled by the control loop. Alternatively, the battery charger 200 may use a pulsed-voltage or pulsed-current charging scheme, where the control loop controls, for instance, the pulse duration and/or pulse shape. Obviously also suitable combinations of the charging schemes may be used. The battery management system 100 uses the calculated battery temperature for accurately controlling the battery charger 200. It will be appreciated that in a simple embodiment, the battery management system 100 may use a measured battery temperature to control the battery charger 200. (See *id.*, col. 26, lns. 18-35).

The Notten Patent states that its FIG. 8a shows that the battery voltage increases at higher charging currents due to the higher potential drop. (See *id.*, col. 26, lns. 65-67; and Fig. 8a). The temperature development during charging is allegedly shown in FIG. 10a of the Notten Patent. The temperature becomes higher at higher currents. According to the Notten Patent, the strongest temperature rise occurs when the pressure starts to level off. This is due to the large heat contribution

of the oxygen recombination reaction, which occurs at an overpotential of 1.2 V. (See *id.*, col. 27, lns. 30-35; and Fig. 10a).

The Farley Patent relates to a battery pack including a component in which predetermined battery parameters definitive of a battery pack characteristic may be stored, together with a battery parameter sensor. (See *id.*, Abstract). In particular, the arrangement of the Farley Patent uses a processor that monitors cell temperature with time. For example, temperature measurements are logged at intervals such as each 5-10 seconds, and when a profile which matches a stored profile indicative of substantially full charge is identified, the transistor may be switched to shunt the charging current. The battery pack temperature may then rise due to the heat dissipated in a resistor R enabling the simple full charge detection by temperature of the battery charger to operate to end or shut-off the fast charge current in appropriate charger types. The processor of the Farley Patent may be arranged such that this overcharge protection occurs only when the temperature rise is due to the charging current (i.e. flow into the cells). (See *id.*, col. 5, lns. 35-51; and col. 19, lns. 50-60).

As shown in Fig. 8b of the Farley Patent, the cell temperature is read and stored so that a profile of cell temperature with time may be built up. If the cell temperature is within the range (step 89) for which fast charging is appropriate, then the cell temperature profile established to date is examined to see if the profile is equivalent to that of a full charged cell array (step 800). If not, after a pause of 1 minute and assuming the timer which has set the fast charging time limit before current shunting is to be applied has not expired (801), control loops back to a point label (a) where a portion of the aforesaid control regime is repeated. An outcome of this iteration is that repeated samples of cell temperature with time are stored and a profile built up which will eventually

equate with the full charge profile (at step 800). An adjustment to the assumed charge state (i.e., 90% charged which is also known as profile) may be made to account for temperature. Whether full charge was reached or not, the current charge level, based on the charging which has occurred applied to the previously stored battery charge status, is displayed. At this point when the battery is fully charged (at step 805), the current shunting transistor is switched on so that only a trickle current remains at the cell terminals. (See *id.*, col. 10, lns. 1-27; and Fig. 8b).

Applicant's invention, as recited in amended independent claim 1 (which includes the subject matter of now-cancelled claim 49), relates to battery charger configured to provide a temperature-regulated charging of a battery, which comprises the steps of, *inter alia*:

a processing arrangement operable to:

- (a) obtain a temperature data associated with the battery; and
- (b) apply a particular amount of a charge to the battery based on the temperature data of the battery, **wherein . . . the battery [is maintained] at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, and wherein, at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater.**

Amended independent claims 15 and 29 relate to process and storage medium, respectively, which recite similar subject matter.

It is again respectfully asserted that in clear contrast to Applicant's claimed invention, the Notten Patent fails to teach, suggest or disclose the battery charger, method and storage medium in which **the battery is maintained at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, and at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A**

or greater, as recited in amended independent claims 1, 5 and 29 of the above referenced application.

In the latest Final Office Action, with regard to now-cancelled claims 49-51 (the subject matter of which has now been included in amended independent claims 1, 15 and 29, respectively), the Examiner acknowledges that the Notten Patent does not expressly disclose the particular amount of charge initially applied to the battery is 6.5A or greater. (See Final Office Action dated June 7, 2007, p. 5, lns. 19-20.) Examiner contends, however, that the *In re Boesch* case supports his contention that it would be allegedly obvious to a person of ordinary skill in the art to initially apply a charge of 6.5A or greater to the battery described in the Notten Patent. Applicant respectfully disagrees.

The court in *In re Boesch* affirmed the Patent Board's decision affirming an examiner's determination that it was obvious to one skilled in the art to identify an optimum composition for alloys where that optimum value was within a range already disclosed in the prior art. 617 F.2d 272, 275-76 (CCPA 1980). Of great importance in *In re Boesch*, was the fact that a range covering the claimed composition had already been disclosed in the art. Conversely, the present application describes using an initial current which is not within a range disclosed in prior art recited by the Examiner and in fact outside of the disclosed range. Indeed, as recited in claims 1, 15 and 29, the particular charge is 6.5A or greater when the charge is initially applied to the battery. The Notten Patent does not teach, suggest or disclose using any range which includes a charge of 6.5A or higher or any charge range including 6.5A or higher. Therefore, the holding in *In re Boesch* is not a proper precedent to apply for a rejection under Section 103(a) for the amended independent claims 1, 15 and 29.

Further, it is respectfully asserted that at the time of the filing of the present application, it would not have been obvious to one skilled in the art to apply an initial charge of 6.5A to the battery described in the Notten Patent and the Examiner provides absolutely no support in any other reference to teach or suggest that it would be. The Notten Patent describes using a battery simulator to develop a predetermined curve which is used for charging a battery. (See Notten Patent, col. 26, lns. 5-30.) Neither the Notten Patent nor any patent relied on by the Examiner teaches, suggest or discloses at least initially charging a battery with a particular initial charge, much less having such **a charge of 6.5A or greater**, as recited in amended independent claims 1, 15 and 29 of the present invention.

Accordingly, for at least the above described reasons, Applicant respectfully asserts that the Notten Patent does not teach, suggest or disclose **the battery is maintained at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, and at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater**, as recited in amended independent claims 1, 15 and 29 of the above referenced application. The Farley Patent, the Podrazhansky Patent and the Yagi Patent do not cure at least these deficiencies of the Notten Patent, and the Examiner does not contend that they do.

Therefore, Applicant respectfully submits that the Notten Patent, taken alone or in combination with the Farley Patent, the Podrazhansky Patent or the Yagi Patent, fail to teach, suggest or disclose the subject matter recited in amended independent claims 1, 15 and 29. The claims which depend from these independent claims are also believed to be allowable over the

Notten, Farley, Podrazhansky and Yagi Patents for at least the same reasons as set forth herein above with respect to amended independent claims 1, 15 and 29.

Thus, for at least these reasons, the 35 U.S.C. §§ 103(a) rejection of amended independent claims 1, 15 and 29, and the § 103(a) rejections of the claims which depend therefrom should be withdrawn. In addition, it is believed that various claims which depend from independent claims 1, 15 and 29 are also allowable over the alleged combination of the Notten, Farley, Podrazhansky and Yagi Patents for at least the same reasons, as well as contain separately patentable subject matter as set forth herein above.

III. NEW CLAIMS 52-54

New claims 52-54 have been added as indicated herein above to recite the subject matter of previously-cancelled claims 10, 24 and 38. Support for these new claims can be found throughout the specification, original-filed claims and drawings. Applicant respectfully submits that the new claims are patentable over the prior art of record. A confirmation that these new claims are indeed patentable over such prior art of record is respectfully requested.

IV. CONCLUSION

In light of the foregoing, Applicant respectfully submits that all pending claims 1-9, 11-23, 25-37, 39-48 and 52-54 are in condition for allowance. Prompt consideration, reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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